

Low Acoustic Signature Manned Intelligence, Surveillance and Reconnaissance

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Description:

OBJECTIVE: Develop active and passive noise suppression technologies to reduce the acoustical footprint of the King Air - 350ER (B - 300ER) manned Intelligence, Surveillance and Reconnaissance (ISR) platform. **DESCRIPTION:** Manned ISR platform operators need to strike a balance between operational factors. They must fly close enough to collect the mission data while maintaining sufficient stand-off such that awareness of their presence does not compromise their ability to collect those data. Due to cost considerations, replacement of the aircraft engine is not an acceptable solution. Rather, the innovative technology developed must minimize the acoustic signature of the King Air - 350ER (B - 300ER). **PHASE I:** Conduct a feasibility study to identify primary sources of acoustic signatures on the King Air - 350ER (B - 300ER) manned ISR platform and develop innovative active and passive noise suppression technologies to reduce the acoustical footprint of the platform. Phase I should result in the development of active and passive noise suppression technologies (examples include: innovative propeller designs and materials to reduce tip speed, modifications of or structural attachments to the exhaust, acoustic insulation materials, innovative materials at engine bay, internal engine design modifications and engine/aircraft interface designs) to attenuate/mitigate/cancel noise signature of the King Air - 350ER (B - 300ER) manned ISR platform such that the projected audible footprint on the ground is minimized. Minimize the acoustic footprint when the platform operates at relevant altitudes (7,500 feet to 15,000 feet Above Ground Level) to support potential Full Motion Video. Assume the MX-15i as the baseline sensor system. The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility

study to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all known options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II. PHASE II: Develop a prototype to demonstrate that the feasible active and passive noise suppression technologies discovered during Phase I are achievable. PHASE III DUAL USE APPLICATIONS: Partner with the airframe and engine manufacturers to embed the feasible active and passive noise suppression technologies into the King Air 350ER (B 300ER) platform. All DoD Components, State and Federal agencies that use aviation platforms to conduct ISR operations can benefit from the development of noise suppression technologies.